

WHAT IS CLAIMED IS:

1. A local oscillator generation circuit, comprising:
a substrate; and
a plurality of voltage controlled oscillators (VCOs) disposed on said substrate, each of said VCOs configured to generate a differential local oscillator (LO) signal over a different frequency band;
wherein one of said VCOs is selected to provide an output LO signal based on a desired frequency for said output LO signal.
2. The local oscillator generation circuit of claim 1, wherein said LO generation circuit further comprises a plurality of polyphase circuits that correspond to said plurality of VCOs, each polyphase circuit configured to generate said output LO signal with in-phase (I) and quadrature (Q) components.
3. The local oscillator generation circuit of claim 2, wherein one of said plurality of VCOs and one of said polyphase circuits are selected based on said desired frequency for said output LO signal.
4. The local oscillator generation circuit of claim 3, wherein said plurality of VCOs are connected to said plurality of said polyphase circuits by a plurality of amplifiers, wherein a VCO is selected by enabling one or more of said amplifiers that correspond to said selected VCO, and disabling more one or more amplifiers that do not correspond to said selected VCO.
5. The local oscillator generation circuit of claim 1, further comprising a LO correction circuit that is configured to adjust an amplitude level of said output LO signal.

6. The local oscillator generation circuit of claim 5, wherein said LO correction circuit comprises:

- a variable amplifier that variably amplifies said output LO signal according to a control signal; and

- a level detect circuit, connected to the output of said variable amplifier, that generates said control signal based on an output level of said variable amplifier.

7. The local oscillator generation circuit of claim 6, wherein said variable amplifier includes a field effect transistor (FET) configured so that said control signal controls a current of said FET, and thereby a gain of said variable amplifier.

8. A local oscillator generation circuit, comprising:

- a substrate;

- a plurality of voltage controlled oscillators (VCOs) disposed on said substrate, each of said VCOs configured to generate a differential local oscillator signal over a different frequency band so that the plurality of VCOs cover a plurality of frequency bands;

- a plurality of amplifiers disposed on said substrate, receiving outputs from said plurality of VCOs; and

- a polyphase circuit that receives outputs from said plurality of amplifiers, and generates a quadrature output LO signal based on one of said outputs of said amplifiers;

- wherein one of said VCOs is selected for said quadrature output LO signal by enabling one of said plurality amplifiers that corresponds to said selected VCO, and disabling one or more of said plurality of amplifiers that do not correspond to said selected VCO.

9. The local oscillator generation circuit of claim 8, wherein said selected VCO is determined based a desired frequency band of said output LO signal.

10. The local oscillator generation circuit 8, further comprising a LO correction circuit that is configured to adjust an amplitude level of said quadrature output LO signal.

11. The local oscillator generation circuit of claim 10, further comprising:
a variable amplifier that variably amplifies said quadrature output LO signal according to a control signal; and
a level detect circuit, connected to the output of said variable amplifier, that generates said control signal based on an output level of said variable amplifier.

12. A method for generating a local oscillator signal for a receiver, comprising:
generating a plurality of local oscillator signals;
outputting said plurality of local oscillator signals to a plurality of corresponding amplifiers;
enabling one of said amplifiers to select one of said local oscillator signals for tuning said receiver, and disabling the other amplifiers; and
tuning a frequency of said selected local oscillator signal.

13. The method of claim 12, further comprising the step of generating a quadrature local oscillator signal from the selected local oscillator signal.

14. The method of claim 12, wherein each the plurality of local oscillator signals cover a different frequency band, and said step of enabling is based on a predetermined frequency band of operation for said receiver.